

REMARKS

In the present Amendment, claims 1, 3, 4, 6-9 and 12-17 are canceled and new claims 18-35 are added. Support for the new claims can be found, for example, in the original specification at page 4, line 21 to page 5, line 12, page 7, lines 10-19, page 8, lines 7-8, Examples 1 to 12 and the original claims. Upon entry of the Amendment, which is respectfully requested, claims 18-35 will be pending in the application.

I. Response to Rejections under 35 U.S.C. § 112, 1st Paragraph

Claims 1, 3-4, 6-9, and 12-17 are rejected under 35 U.S.C. § 112, 1st paragraph, as allegedly failing to comply with the written description requirement.

In the Office Action, the Examiner states that the language “mixture consisting essentially of a polyurethane prepolymer . . . , a curing agent . . . , and a photochromic organic compound” is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

In particular, the Examiner states that the specification does not give any guidance as to excluding any materials from the polyurethane product. The Examiner concludes that one skilled in the art reading the present specification would not know which additional materials to exclude from the composition.

The rejected claims are canceled thereby rendering the rejection moot.

However, Applicants respectfully traverse the rejection with respect to the Examiner’s statements regarding the term “consisting essentially of”, which is employed in the newly added

claims 18-31. Specifically, Applicants submit that the Examiner has not provided a legal basis for the conclusion that the phrase “consisting essentially of” in the claims of the present application is not adequately supported by the specification. In this regard Applicants submit that the phrase “consisting essentially of” is a phrase that has a well established legal meaning to exclude elements that would affect the basic and novel characteristics of the claimed invention. Employing this phrase is a well established procedure in patent prosecution practice and “the absence of definitions or details for well-established terms or procedures should not be the basis of a rejection under 35 U.S.C. 112, para. 1, for lack of adequate written description.” MPEP §2163.II.A.1. (page 2100-164).

Further, Applicants’ specification, as originally filed, provides sufficient guidelines such that one skilled in the art could determine, without undue experimentation, what changes to the cured reaction product and polyurethane prepolymer would materially affect the basic and novel properties of the compositions and are thereby excluded from the instant claims.

Accordingly, Applicants respectfully request withdrawal of the rejection.

II. Response to Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Claims 1, 3-4, 6-9, and 12-17 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejected claims are canceled thereby rendering the rejection moot. Accordingly, Applicants respectfully request withdrawal of the rejection.

III. Response to Rejection Under 35 U.S.C. § 102

Claims 1, 3, 9 and 13 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ormsby et al as evidenced by Bright.

The rejected claims are canceled thereby rendering the rejection moot. Accordingly, Applicants respectfully request withdrawal of the rejection.

IV. Response to Rejection Under 35 U.S.C. § 103

Claims 4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ormsby et al. as evidenced by Bright and in view of Linne.

Claims 7-8 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ormsby et al. as evidenced by Bright and in view of Perrott et al.

Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ormsby et al. as evidenced by Bright and in view of Bae et al.

The rejected claims are canceled thereby rendering the rejection moot. Accordingly, Applicants respectfully request withdrawal of the rejections.

V. New Claims

New claims 18-22, 26-27 and 28-31 are directed to a transparent synthetic resin laminate with photochromic properties.

New claims 23-24 and 32-35 are directed to a process for producing a transparent synthetic resin laminate with photochromic properties.

New claim 25 is directed to a process for producing a plastic lens with photochromic properties.

In the Office Action dated April 8, 2004, the Examiner states that Applicants have not shown that the prepolymer method using an added tri-methylolol propane and the same isocyanate/polyol reactants results in a different polyurethane than a polyurethane made by reacting the starting materials in situ. See paragraph No. 25 at pages 8-9 of the Action. The Examiner also states that Applicants have not shown that the method of bending the lens forms a different curved lens than one formed by applying the polyurethane to a curved lens. See id.

In response, Applicants submit a Declaration herewith including experimental data showing that the prepolymer method using an added tri-methylolol propane and the same isocyanate/polyol reactants results in a different polyurethane than a polyurethane made by reacting the starting materials in situ, and that the method of bending the lens forms a different curved lens than one formed by applying the polyurethane to a curved lens.

As shown in the Declaration, Example 1, the synthetic resin laminate of the present invention exhibited an excellent photochromic properties. As seen in Example 1, when a lens was formed from the synthetic resin laminate by the process of bending, the lens was formed normally and without causing delamination of the photochromic layer interposed between two polycarbonate films of the outer layers. See Mr. Kouno's Declaration at page 5, first full paragraph, and Table 1.

Hitherto, there was no case where lenses with photochromic properties such as goggles and sunglasses were formed from a synthetic resin laminate with a photochromism property by a

process of bending. It is one of the essential features of the present invention that the process of bending is employed in the formation of a lens with photochromic properties from the synthetic resin laminate with photochromic properties.

As shown in Comparative Example 1 of the Declaration, a photochromic layer was formed by reacting a mixture of the same isocyanate/diol/triol and the same amount thereof as in Example 1 of the Declaration in situ. The photochromism property of the synthetic resin laminate thus obtained was inferior to that of Example 1. Further, when a lens was formed from the synthetic resin laminate by the process of bending, delamination of the photochromic layer occurred. It is considered that this is due to peeling-off of the photochromic layer from the outer layers by applying the stress of bending. This means that it is very difficult to apply a process of bending to the synthetic resin laminate of Comparative Example 1 in the formation of a lens with photochromic properties.

Further, as shown in Comparative Example 2 of the Declaration, the same experiment as in Example 1 was conducted except that tri-methylol propane of a monomer alone was used as a curing agent instead of the polyurethane polyol used in Example 1 as a curing agent. Also in Comparative Example 2, the photochromic properties of the synthetic resin laminate thus obtained were inferior to those of Example 1 and furthermore it was very difficult to employ a process of bending to the synthetic resin laminate. Therefore, this means that any curing agent other than the recited polyurethane polyol which would affect the basic and novel features of the present invention, is excluded from the curing agent to be used in the present invention.

As shown in Comparative Example 3 of the Declaration, the same experiment as in Example 1 was conducted except that CR-39 was used instead of the polycarbonate films as outer layers. Cracking of the synthetic resin laminate thus obtained (disc), occurred during bending. Therefore it was impossible to apply a process of bending to the synthetic resin laminate using CR-39 as outer layers.

In regard to the Examiner's statements regarding Ormsby et al, Applicants submit that the photochromic layer disclosed in Ormsby et al corresponds to that obtained in Comparative Example 1. In other words, this means that even if a polycarbonate is applied to the outer layers of the synthetic resin laminate with photochromic properties, the photochromic properties of the synthetic resin laminate composed of the photochromic layer of Ormsby et al are inferior to those of the present invention and furthermore it is very difficult to apply a process of bending to the synthetic resin laminate in the formation of a lens with photochromic properties.

In Ormsby et al, CR-39 is used as the outer layers. As shown in Comparative Example 3 of the Declaration, it was impossible to apply a process of bending to the synthetic resin laminate using CR-39 as outer layers. In Ormsby et al, the process of cast molding is applied to the production of a lens with photochromic properties using CR-39 (col. 3, lines 46 to 61).

In detail, the process of cast molding comprises the following steps:

1. A mixture of CR-39 and a catalyst is poured into each of two pouring molds composed of a set of glass molds with concave and convex surfaces, provided with a gasket having a thickness of 1mm.
2. The mixture is left standing in the mold at 60°C for one day.

3. Two blank lenses of CR-39 having no degree are taken off from each mold.
4. A gasket of thickness 0.5 mm is placed on a concave surface of one blank lens (CR-39) and another blank lens (CR-39) is put thereon on its convex surface to face downward.
5. A polyurethane adhesive containing a photochromic compound is poured into the space formed by the two lenses and the gasket.
6. The polyurethane adhesive therein is heat cured at 70°C for 2 days.

Thus, the process of cast molding comprises multiple steps. When plural lenses are formed by the process of cast molding, the above-mentioned multiple steps 1-6 are repeated for each lens.

In contrast, in the process of bending, as shown in Example 1 of the Declaration, a disc is formed from a synthetic resin laminate. If the synthetic resin laminate is formed in a large size, a large number of discs can be produced from the synthetic resin laminate by punching. A large number of lenses can be formed from each disc by heat bending. Thus, in the process of bending, a large number of lenses can be formed without repeating multiple steps. Therefore, the process of bending is industrially suitable to large scale production of lenses with photochromic properties.

Thus, as shown in the Declaration and set forth above, the present invention is clearly distinguished from Ormsby et al and is not obvious over Ormsby et al.

Bright discloses the application of CR-39 to the formation of lenses and the process of cast molding to the formation of a lens (col. 2, lines 19 to 33 and col. 3 to 6). However, Bright

does not teach the synthetic resin laminate of the present invention or the use of a process of bending to form lenses with photochromic properties.

Thus, the presently claimed invention is not anticipated nor rendered obvious by Ormsby et al as evidenced by Bright.

Applicants submit that none of Linne, Bae et al or Perrot et al cures the deficiencies of Ormsby et al as evidenced by Bright.

Linne teaches polyurethane compositions for sealing rigid plastic substrates. The preferred rigid substrate includes polycarbonates. However, Linne does not disclose a photochromic layer containing a photochromic compound in a synthetic resin laminate to be used for a lens with photochromic properties.

As described above, even if a polycarbonate is applied to the outer layers of a synthetic resin laminate with photochromic properties, the photochromic properties of the synthetic resin laminate will depend on the type and performance of the photochromic layer in the synthetic resin laminate. Therefore, there is no motivation for one of ordinary skill in the art to combine Ormsby et al, Bright and Linne with a reasonable expectation of success in achieving the claimed invention.

In regard to the combination of Ormsby et al, Bright and Perrot et al, Applicants submit that Perrot et al does not cure the deficiencies of Ormsby et al and Bright. Thus, the present invention is not rendered obvious by the combination of Ormsby et al, Bright and Perrot et al.

With respect to the combination of Ormsby et al, Bright and Bae et al, the Examiner alleges that Bae et al teaches that CR-39 and bisphenol A polycarbonates are equally used in lens

applications. However, Bae et al fails to disclose the application of bisphenol A polycarbonate to a lens with photochromic properties. Thus, as in the combination of Ormsby et al, Bright and Linne, even if a polycarbonate is applied to outer layers of a synthetic resin laminate with photochromic properties, the photochromic properties of the synthetic resin laminate with and the possibility of application of the process of bending to the formation of a lens with photochromic properties depend on the type and performance of the photochromic layer in the synthetic resin laminate. Therefore, there is no motivation for one of ordinary skill in the art to combine Ormsby et al, Bright and Bae et al with a reasonable expectation of success in achieving the claimed invention.

Accordingly, Applicants respectfully submit that the rejections under 35 U.S.C. § 103 we have no application to the present claims.

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN. NO. 09/980,010

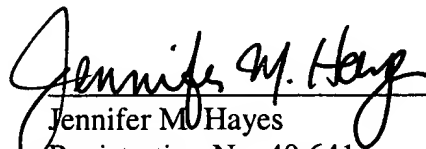
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Respectfully submitted,

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